MITSUBISHI

CL2X8-D1S2
CC-Link/LT Remote I/O Module

Thank you very much for purchasing this product.

Please read this manual thoroughly before starting to use the product and handle the product properly.

User's Manual

CC-Link/LT

MODEL	CL2X8-D1S2-U
MODEL Number	13JP23
IB(NA)-0800256-B(0506)MEE	

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●SAFETY PRECAUTIONS●

(Read these precautions before using.)

Please read this manual carefully and pay special attention to safety in order to handle this product properly. Also pay careful attention to safety and handle the module properly.
These precautions apply only to Mitsubishi equipment. Refer to the user's manual of the CPU module to use for a description of the PLC system safety precautions.
These ● SAFETY PRECAUTIONS ● classify the safety precautions into two categories: "DANGER" and "CAUTION".

⚠ DANGER	Procedures which may lead to a dangerous condition and cause death or serious injury if not carried out properly.
⚠ CAUTION	Procedures which may lead to a dangerous condition and cause superficial to medium injury, or physical damage only, if not carried out properly.

Depending on circumstances, procedures indicated by ⚠**CAUTION** may also be linked to serious results.
In any case, it is important to follow the directions for usage.
Store this manual in a safe place so that you can take it out and read it whenever necessary. Always forward it to the end user.

[DESIGN PRECAUTIONS]

⚠ DANGER

- Configure an interlock circuit in a sequence program so that the system operates on the safety side using the communication status information in the event the data link falls into a communication problem. Otherwise, erroneous output and malfunction may result in accidents.
- Input could be switched on or off when a problem occurs in the remote I/O modules. So build an external monitoring circuit that will monitor any input signals that could cause a serious accident.

⚠ CAUTION

- Do not have control cables and communication cables bundled with or placed near by the main circuit and/or power cables. Wire those cables at least 100mm(3.94 inch) away from the main circuit and/or power cables. It may cause malfunction due to noise interference.

[INSTALLATION PRECAUTIONS]

⚠ CAUTION

- Use the module in an environment that meets the general specifications contained in this manual. Using this module in an environment outside the range of the general specifications could result in electric shock, fire, erroneous operation, and damage to or deterioration of the product.
- Do not directly touch the module's conductive parts. Doing so could cause malfunction or trouble in the module.
- Tighten the module securely using DIN rail or installation screws within the specified torque range. If the screws are too lose, the module may drop from its installation position, short circuit, or malfunction. If the screws are too tight, the screws may be damaged, which may cause the module to drop from its installation position or short circuit.

[WIRING PRECAUTIONS]

⚠ DANGER

- Completely turn off the externally supplied power used in the system when installing or placing wiring. Not completely turning off all power could result in electric shock or damage to the product.

⚠ CAUTION

- Terminal screws which are not to be used must be tightened always. Otherwise there will be a danger of short circuit against the bare solderless terminals.
- Perform correct wiring for the module according to the product's rated voltage and terminal arrangement. Connecting to a power supply different from rating or miss-wiring may cause fire and/or product failure.
- Fix terminal screws securely within the regulated torque. Loose terminal screws may cause fire and/or malfunction. If the terminal screws are too tight, it may cause short circuit or erroneous operation due to damage of the screws.
- Make sure foreign objects do not get inside the module, such as dirt and wire chips. It may cause fire, product failure or malfunction.

[STARTING AND MAINTENANCE PRECAUTIONS]

⚠ DANGER

- Do not touch terminals when the power is on. Doing so could cause an electric shock.
- Switch off all phases of the externally supplied power used in the system when cleaning the module or retightening the terminal or module mounting screws. Not doing so could result in electric shock.

[STARTING AND MAINTENANCE PRECAUTIONS]

⚠ CAUTION

- Do not disassemble or modify the module. Doing so may cause failure, malfunction, injury, or fire.
- Do not drop or apply any strong impact to the module. Doing so may damage the module.
- Completely turn off the externally supplied power used in the system before mounting or removing the module. Not doing so could result in damage to the product.
- Before touching the module, always touch grounded metal, etc. to discharge static electricity from the human body, etc. Not doing so can cause the module to fail or malfunction.

[DISPOSAL PRECAUTIONS]

⚠ CAUTION

- When disposing of this product, treat it as industrial waste.

1. Overview

This user's manual explains specifications and names of individual parts of the CL2X8-D1S2 type CC-Link/LT remote I/O module (hereinafter abbreviated as remote I/O module).

2. Specifications

2.1 General Specifications

The General specifications for the remote I/O module are shown in the following table.

Item	Specifications					
Operating ambient temperature	0 to 55℃					
Storage ambient temperature	-25 to 75℃					
Operating ambient humidity	5 to 95%RH, non-condensing					
Storage ambient humidity	5 to 95%RH, non-condensing					
Vibration resistance	Conforming to JIS B 3502, IEC 61131-2		Frequency	Acceleration	Amplitude	Sweep count
		Under intermittent vibration	10 to 57Hz	———	0.075mm (0.003in.)	10 times each in X, Y, Z directions (for 80 min.)
			57 to 150Hz	9.8m/s²	———	
		Under continuous vibration	10 to 57Hz	———	0.035mm (0.001in.)	
			57 to 150Hz	4.9m/s²	———	
Shock resistance	Conforming to JIS B 3502, IEC 61131-2 (147 m/s², 3 times in each of 3 directions X, Y, Z)					
Operating ambience	No corrosive gases					
Operating altitude	2000m (6562ft.) max.					
Installation location	Inside control panel *3					
Overvoltage category *1	II max.					
Pollution level *2	2 max.					

*1 : This indicates the section of the power supply to which the equipment is assumed to be connected between the public electrical power distribution network and the machinery within premises. Category II applies to equipment for which electrical power is supplied from fixed facilities. The surge voltage withstand level for up to the rated voltage of 300 V is 2500 V.
*2 : This index indicates the degree to which conductive material is generated in terms of the environment in which the equipment is used.
Pollution level 2 is when only non-conductive pollution occurs. A temporary conductivity caused by condensing must be expected occasionally.
*3 : It can also be used in an environment other than on the control panel if the conditions such as usage ambient temperature and humidity are satisfied.

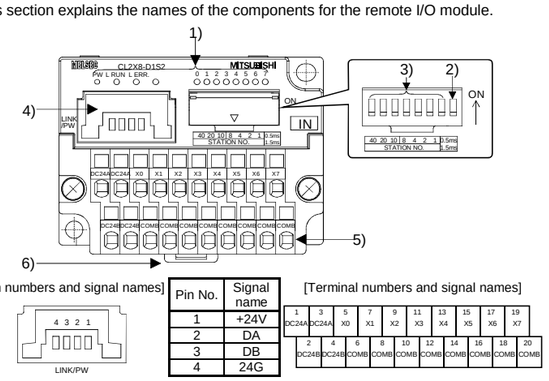
2.2 Performance specifications

The performance specifications for the remote I/O module are shown in the following table.

Item \ Type	CL2X8-D1S2	
Number of inputs	8 points	
Isolation method	Photocoupler isolation	
Rated load voltage	24V DC	
Rated input current	Approx. 4mA	
Max. simultaneous ON input points	100%	
ON voltage/ON current	19V or higher/3mA or higher	
OFF voltage/OFF current	11V or lower/1.7mA or lower	
Input resistance	5.6kΩ	
Response time	Response time setting	0.5ms (High speed response type) / 1.5ms (Standard type)
	OFF → ON TYP.	0.05 ms / —
	OFF → ON MAX.	0.1 ms / 1.5ms
	ON → OFF TYP.	0.2 ms / —
	ON → OFF MAX.	0.5 ms / 1.5 ms
Common wiring method	8 points/1 common (terminal block 2-wire type)	
Input method	Positive common/negative common shared type	
Number of stations occupied	In 4-point mode: Occupies 2 stations In 8 or 16-point mode: Occupies 1 station	
Module power supply	Voltage	24V DC (-15 to +20%) (ripple ratio : within 5%)
	Current consumption	40mA or lower (When 24V DC and all point is on)
	Current on startup	70mA or lower (24V DC)
Noise durability	DC type noise voltage 500Vp-p, noise width 1μs, noise carrier frequency 25 to 60Hz (noise simulator condition) First transient/noise burst IEC 61000-4-4 : 1kV	
Withstand voltage	500V AC for 1 minute between primary (external DC terminal) and secondary (internal circuit)	
Insulation resistance	10MΩ or more between primary (external DC terminal) and secondary (internal circuit) when measured with a 500V DC insulation resistance tester	
Protection class	IP2X	
Weight	0.12kg	
I/O part connection method	2-piece 20-point spring clamp terminal block	
Module installation method	DIN rail installation, mounted by screws of type M4 × 0.7 mm × 16 mm or larger, Can be installed in six directions	
Applicable wire size	0.3 to 1.5mm² (AWG22 to 16)	

3. Part Names

This section explains the names of the components for the remote I/O module.



[Pin numbers and signal names]

Pin No.	Signal name
1	+24V
2	DA
3	DB
4	24G

[Terminal numbers and signal names]

1 DC24A	3 DC24A	5 X0	7 X1	9 X2	11 X3	13 X4	15 X5	17 X6	19 X7
2 DC24B	4 DC24B	6 COMB	8 COMB	10 COMB	12 COMB	14 COMB	16 COMB	18 COMB	20 COMB

No.	Item	Description	
1)	Operating status indicator LEDs	LED name	Confirmation details
		PW	On: Power supply on. Off: The power supply is turned off or the voltage drop is too large.
		L RUN	On: Normal communication. Off : Communication cutoff (time expiration error).
		L ERR.	On: Indicates that a communication data error has occurred or the setting switch is outside the allowable range. Flicker at regular intervals: Indicates that the setting switch has been changed while current is being conducted. (The module continues to operate even while the LED is flickering. The changed settings will be reflected when the power has been restored.) Flicker at irregular intervals: Indicates that the terminal resistor is left unconnected or that the module or connection cable are affected by noise. Off: Normal communication.
		0 to 7	Displays the ON/OFF status of the input (turned on in the ON status and turned off in the OFF status).
2)	Response time setting switch (SW8)	Set the response time (OFF →ON/ON →OFF time) of the remote I/O module. OFF is set as default (factory-set). Noise may be taken in as input, if high speed response type is set. Be sure to set response time in consideration of the environment. ON: 0.5ms (High speed response type) OFF: 1.5ms (Standard type)	
3)	Station number setting switches (SW1 to 7)	Select "10", "20" or "40" to set the ten's place of the station number. Select "1","2","4" or "8" to set the one's place of the station number. All switches are set to OFF at shipment from the factory. Always set the station number within the range of 1 to 64. A setting error occurs and "L ERR." LED flickers if the value outside the range 1 to 64 is set. (Example) Set the switches as below when setting the station number to 32:	
4)	Connector for CC-Link/LT interface	Connector for CC-Link/LT communication line and module power supply.	
5)	Terminal block for I/O interface	Terminal block for connecting input signals and external power supply of the input part.	
6)	Hook for DIN rail	Hook for installing the module on a DIN rail.	

Station number	Ten's place			One's place			
	40	20	10	8	4	2	1
32	OFF	ON	ON	OFF	OFF	ON	OFF

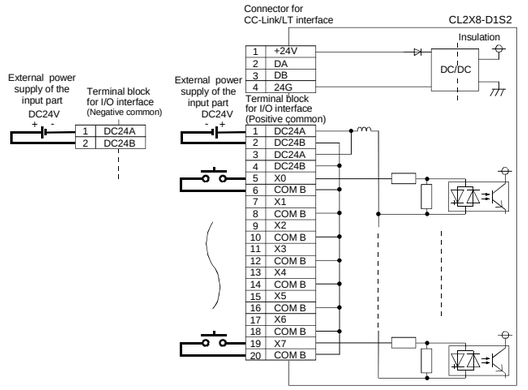
4. Handling Precautions

(1) Tighten the terminal screws for the module to the specified torque shown below. Insufficient tightening torque could result in shorts, failures or malfunction.

Screw location	Clamping torque range
Module mounting screw (M4 screw)	0.824 to 1.11 N • m
Terminal block mounting screw (M3 screw)	0.425 to 0.575 N • m

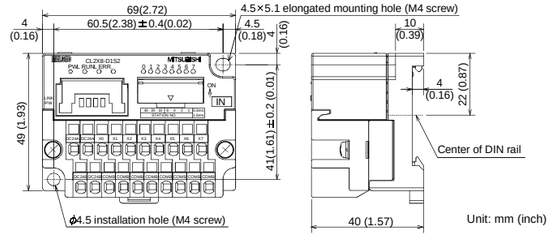
(2) When using a DIN rail, attach the DIN rail after taking the following items into consideration:
  (a) Applicable DIN rail types (conform to JIS C 2812)
    TH35-7.5Fe
    TH35-7.5Al
  (b) Interval between the DIN rail's installation screws
    Tighten the screws using a pitch of 200mm (7.87in.) or less when attaching a DIN rail.
(3) To attach the remote I/O module to the DIN rail, press the centerline area of the DIN rail hook beneath the module until a click is heard.
(4) Maintain some distance between the module and other components and parts, 10 mm from the top and 50mm (1.97in.) from the bottom of the module, in order to improve ventilation and to make replacement of the module easy if a remote I/O module is installed on a board.
(5) Install the remote I/O module on a level surface.
If the surface is uneven, unnecessary force is applied to the printed circuit board, causing malfunctions.

5. Wiring



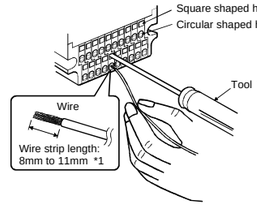
All COM B and DC24B terminals are connected within the module (common).
The power to the module is supplied via the power adapter.

6. External Dimensions



7. Cable Installation Procedure

(1) Cable Installation
Insert the tool into the square shaped hole, which corresponds to the terminal you wish to use.
While the tool is inside the hole, insert the wire into the circular shaped hole (as shown below).
Remove the tool from the square shaped hole, taking care not to remove the wire.
After the wire has been clamped, gently pull the wire to confirm that it is secure.



*1: Take care that the wire strip length is between 8mm to 11mm.
If the wire strip length is too long, this will expose the bare wire, which increases the risk of electric shock or short circuit.
If the wire strip length is too short, this will result in the wire not being securely attached.
*2: When mounting/removing the cable, make sure to use the dedicated tool, i.e., a tool dedicated to spring clamp terminal block, and insert the tool vertically into the hole.
If a general slotted screwdriver is used instead of the dedicated tool, or the tool is not vertically inserted, the spring clamp terminal part or terminal block resin part might be broken.

(2) Cable removal
Insert the tool into the corresponding square shaped hall until it stops.
Pull the wire out of the hall completely.

Warranty

Mitsubishi will not be held liable for damage caused by factors found not to be the cause of Mitsubishi; machine damage or lost profits caused by faults in the Mitsubishi products; damage, secondary damage, accident compensation caused by special factors unpredictable by Mitsubishi; damages to products other than Mitsubishi products; and to other duties.

⚠For safe use
- This product has been manufactured as a general-purpose part for general industries, and has not been designed or manufactured to be incorporated in a device or system used in purposes related to human life.
- Before using the product for special purposes such as nuclear power, electric power, aerospace, medicine or passenger movement vehicles, consult with Mitsubishi.
- This product has been manufactured under strict quality control. However, when installing the product where major accidents or losses could occur if the product fails, install appropriate backup or failsafe functions in the system.

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